

To: GVTA Board of Directors

From: Sheri Plewes, Vice-President, Capital Management and Engineering

Date: June 16, 2004

Subject: **Options for Rapid Transit Expansion**

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The following motions are presented for the Board's consideration:

- A. That the Board approve the implementation of both the Northeast Sector (NES) and Richmond-Airport-Vancouver (RAV) rapid transit lines by 2010, and accept in-principle the Provincial offer to assume the responsibility for the completion of the RAV project. Specifically the Board directs staff to:
- Transfer all shares of RAVCO to the Province;
  - Renegotiate the funding agreement with the Province and to report back to the Board on key business terms which are to include:
    - Maintenance of Essential Elements as articulated in the RFP; and
    - Requirement that Proponents propose an at-grade solution on No.3 Road in Richmond that will be implemented if a financially, technically and operationally viable solution is offered;
  - Report back to the Board on recommendations and funding for Priced Options for the RAV project; and
  - Proceed with the outlined plan to complete the North East Sector rapid transit line by 2010; and
    - Negotiate a funding agreement with the Province for a grant of \$170M in accordance with the Province's offer and the *Rapid Transit Restated Cost Sharing Agreement*;
    - Report back by September with a project implementation plan and schedule; and
    - Consider changes to GVTA amortization policy and/or the reduction of the 2008-2010 Major Road Capital, if required to close the NES funding gap, as an option during the development of the GVTA funding strategy beyond 2007.

If A is not approved, the following motions are presented for the Board's choice:

- B. That the Board approve the implementation by 2010 of the Northeast Sector rapid transit line and, through the existing procurement process, the Richmond-Airport-Vancouver rapid transit line.
- For the NES project:
    - Direct staff to negotiate a funding agreement with the Province for a grant of \$170M in accordance with the Province's offer and the *Rapid Transit Restated Cost Sharing Agreement*;
    - Direct staff to report back by September with a NES project implementation plan and schedule; and
    - Direct staff to consider change to GVTA amortization policy and/or reduction of 2008-2010 Major Road Capital, if required to close NES funding gap, as an option during the development of the GVTA funding strategy beyond 2007; and
  - For the RAV project:
    - Proceed to BAFO under current procurement process;
    - Authorize the RAVCO Board to negotiate scope changes and efficiencies to reduce project costs within the approved Essential Elements, including less tunneling in Vancouver south of West 49<sup>th</sup> Avenue and an at-grade solution on No.3 Rd in Richmond if a financially, technically and operationally viable solution is offered by Proponents;
    - Complete funding agreements for existing commitments;
    - Approve GVTA funding gap closure options for negotiation if required;
    - Direct staff to report back in July on recommendations and funding for Priced Options;
    - Advance \$25M from the approved capital funding of \$300M to support expedited property acquisition and the procurement process; and
    - Authorize the RAVCO Board to complete the procurement process, including selection of the successful proponent and proposal, and execution of the Concession Agreement, unless one or more of the following occurs:
      - Proposal is not within funding commitments;
      - Essential Elements, adjusted for deferral of Westminster Station, are not met; or,
      - Significant increase in the GVTA risk profile from that contemplated by the draft Concession Agreement.

OR

C. That the Board approve the implementation by 2010 of the Northeast Sector rapid transit line and, through a new procurement process, the Richmond-Airport-Vancouver rapid transit line.

- For the NES project:
  - Direct staff to negotiate a funding agreement with the Province for a grant of \$170M in accordance with the Province's offer and the *Rapid Transit Restated Cost Sharing Agreement*;
  - Direct staff to report back by September with a NES project implementation plan and schedule; and,
  - Direct staff to consider change to GVTA amortization policy and/or reduction of 2008-2010 Major Road Capital, if required to close NES funding gap, as an option during the development of the GVTA funding strategy beyond 2007; and
- For the RAV project:
  - Terminate the current RAV procurement process and RAV Project Management Ltd.;
  - Request that the Province, federal government and YVR keep their respective partner funding on the table for the new RAV procurement; and
  - Request a City of Vancouver resolution endorsing a primarily at-grade system in the Cambie corridor.

## **BACKGROUND**

At the regular Board Meeting held on May 7, 2004, the Board approved the following motion:

### **WHEREAS**

The GVRD and GVTA/TransLink have a 10-year Capital Plan that envisions completion of a rapid transit line between Richmond, Vancouver and the Airport, and an extension of the Millennium Line to the Northeast Sector of the GVRD.

### **AND WHEREAS**

The Provincial Government, the Federal Government, the Airport Authority and GVTA/TransLink have committed significant capital funds to the completion of these rapid transit lines.

### **AND WHEREAS**

The Board of Directors of GVTA/TransLink wish to continue the development of these lines as part of the regional public transportation plan and in support of the GVRD Livable Region Strategy.

**AND WHEREAS**

The Board of Directors of GVTA/TransLink believes that both lines can be built within the available funding envelope by considering all alternatives for the cost-efficient public development of both lines.

**THEREFORE BE IT RESOLVED THAT**

GVTA/TransLink staff, with the assistance of SkyTrain staff and GVRD staff, develop a plan to provide public or private rapid transit between Richmond, Vancouver and the Airport, and as an extension of the Millennium Line to the Northeast Sector, within the available funding commitments and with due regard to ridership, cost, support of the Livable Region Strategy and such other factors as staff or the Board may advise.

**AND FURTHER BE IT RESOLVED THAT**

The GVTA/TransLink Board urge the Federal and Provincial government and the Airport Authority to remain committed to their proposed funding and cooperate and assist in the planning to achieve our goal of an enhanced urban transit system based on the immediate, cost-efficient construction of both proposed lines.

In response to the Board resolution of May 7, 2004, and in the context of GVTA's Ten Year Outlook funding projections and assumptions, GVTA staff have put forward a plan to complete the NES rapid transit line by 2010, with two alternatives for the development of the RAV rapid transit line, as outlined below.

**DISCUSSION**

**NES RAPID TRANSIT LINE**

The plan for the completion of the Northeast Sector rapid transit line is based on the current review of alignment and technology options being undertaken by the GVTA. For the purposes of this report, and based on initial support from the benefiting municipalities, the following assumptions have been made:

- Alignment: Northwest corridor
- Technology options: GLT, LRT
- Design-Build procurement
- Operated by TransLink subsidiary

A summary of the financial and technical aspects of the two technology options are included in Appendix I.

### Capital and Operating Cost Estimates

Construction and operating period costs are based on 2003 planning estimates, and are provided in the table below in nominal dollars including inflation and IDC.

|                                            | GLT     | LRT  |
|--------------------------------------------|---------|------|
| <b>Capital Construction Cost Estimates</b> |         |      |
| Capital Cost Estimates                     | 355M    | 800M |
| Available Capital Funding                  |         |      |
| GVTA                                       | 400     | 400  |
| GVTA MIF                                   | 13      | 13   |
| Province                                   | 0-170   | 170  |
| Total                                      | 413-583 | 583  |
| Unfunded Capital Cost Estimates            | 0       | 217  |
| <b>Annual Operating Cost Estimates</b>     |         |      |
| Net Cost (O&M costs less fare revenues)    | 10      | 11   |

The GVTA is able to fully fund GLT without an additional contribution from the Province.

### Potential Options to Fund NES

Opportunities to reduce overall project costs would be fully explored including reduced tunneling, contributions in-kind and commercial opportunities. If a project funding gap remains, the GVTA may increase its funding via one or more of the options listed in the following table. The ultimate decision on the funding strategy will be made when the 2008 to 2013 financial strategy is completed.

| Potential Options                                                  | Capital \$M    |
|--------------------------------------------------------------------|----------------|
| Extend GVTA \$775 million debt amortization from 20 to 30-40 years | 142-225        |
| Reduce 2008-2010 Major Road Capital Allocation                     | 105            |
| <b>Total</b>                                                       | <b>247-330</b> |

GVTA's ten-year financial projections assume that the debt for RAV and NES will be amortized over twenty years. While this amortization period is significantly less than the service life of the assets, it is consistent with municipal practices in British Columbia.

It is appropriate to increase the amortization period to more closely match the useful life of the assets. The choice of debt amortization period is a tradeoff between revenue requirements and accumulated debt. A longer amortization period achieves lower debt payments and the ability to service a higher level of debt. However, a higher level of accumulated debt results in less financial flexibility for an organization.

The potential reduction of the Major Road Capital allocation would not impact the completion of the eight major road projects identified for initiation in the 2005-2007 timeframe. No other major road projects have been identified beyond 2007. Furthermore, the 2008-2010 period is expected to see an unprecedented level of road/infrastructure construction activity, such that the initiation of additional new projects would be faced with severe cost and labour force challenges.

### **NES Operating Impacts**

The Ten Year Outlook financial projections assumed an in-service date for NES in late 2012. The plan to advance the completion of the NES line by three years has the following significant impacts on the Outlook financial plan:

- The annual net cost results in an operating impact during 2010-2012
- LRT requires more GVTA funding than provided in Ten Year Outlook resulting in higher annual debt service costs

The overall impact of advancing completion of NES on GVTA financial projections is a reduction of reserves in 2010-2012, including an annual deficit in 2010. The annual reserve recovers in 2013 to meet the reserve target of 10% of total expenditures.

### **Approval of the NES plan requires the following:**

- Acceptance that a change to GVTA amortization policy and/or reduction of 2008-2010 Major Road Capital, if required to close NES funding gap, may be required to fund the 10-year capital plan beyond 2008 if LRT technology is chosen.

### **IMPLEMENT RAV LINE WITHIN CURRENT PROCUREMENT PROCESS**

This option contemplates implementing the RAV Line within the current procurement process. The existing funding commitments from all funding partners remain and potential addition contributions and scope reductions would be required from funding partners and the Cities of Richmond and Vancouver to close the funding gap. Options for closing the funding gap include additional Provincial funding, commercial opportunities, sale of Sexsmith Park'n Ride, operating insurance provided in conjunction with Expo and Millennium Line, and bus loop and road works construction through existing programs. The Proponents would also be expected to find cost efficiencies within their proposals to close the gap.

This option is based on the lowest cost base case proposal (Best Value Proposal) and existing commitments of the funding partners. The alignment is shown in Figure 2. The capital cost of the automated light rail (ALRT) technology proposed in the Best Value Proposal is higher than the estimated cost of the manual light rail (LRT) partially grade

separated technology contemplated under the proposed new process. However, more certainty exists with the current procurement as the costs are based on an actual proposal and funding commitments have been negotiated based on the current procurement process. Therefore, the risk associated with construction and operating costs, funding and schedule are minimized with this option.

At this time, the overall project schedule has lost approximately two months. To reduce schedule risk, and in order to provide assurances to the Proponents should the project proceed to BAFO, the TransLink Board would delegate to the RAVCO Board the authority to negotiate and execute the Concession Agreement with the successful Proponent. Under this option, further Board approvals would only be required in the event that the selected Proposal exceeds the available funding, the Essential Elements as stated in the RFP have not been met (excepting the deferral of Westminster Station), or there is a significant increase in the GVTA risk profile from that contemplated by the draft Concession Agreement.

Proceeding with this option requires the following:

- Proceed to BAFO under current procurement process;
- Authorize the RAVCO Board to negotiate scope changes and efficiencies to reduce project costs within the approved Essential Elements, including less tunneling in Vancouver south of West 49<sup>th</sup> Avenue and an at-grade solution on No.3 Rd in Richmond if a financially, technically and operationally viable solution is offered by Proponents;
- Complete funding agreements for existing commitments;
- Approve GVTA funding gap closure options for negotiation if required;
- Direct staff to report back in July on recommendations and funding for Priced Options;
- Advance \$25M from the approved capital funding of \$300M to support expedited property acquisition and the procurement process; and
- Authorize the RAVCO Board to complete the procurement process, including selection of the successful proponent and proposal, and execution of the Concession Agreement, unless one or more of the following occurs:
  - Proposal is not within funding commitments;
  - Essential Elements, adjusted for deferral of Westminster Station, are not met; or,
  - Significant increase in the GVTA risk profile from that contemplated by the draft Concession Agreement.

## **IMPLEMENT RAV LINE UNDER A NEW PROCUREMENT PROCESS**

Under this scenario, alternate corridor and technologies could be reconsidered under a new procurement process. However, for the purposes of this discussion, a Light Rail Transit (LRT) system substantially in accordance with the current RAV project alignment

is assumed, in order to facilitate the objective to complete the line by 2010. Previous LRT studies have provided order of magnitude estimates in the range of \$1.1B to 1.2B, for a fully at-grade system in Richmond and Vancouver, including utilizing the existing Cambie Bridge. A fully at-grade LRT system is considered to be extremely challenging to achieve in Vancouver between King Edward and Nelson due to alignment, grade and property constraints.

Based on the Project Definition Report, a primarily surface LRT system, in tunnel from Nelson to King Edward, is a technically feasible option for the RAV corridor (Figure 3). The capital construction cost of this option is lower than the capital cost of the Best Value Proposal. There is a fair amount of uncertainty with the cost estimate for this option as it is a preliminary estimate based on conceptual design. The cost could increase or decrease once actual proposals are received during the procurement process. However, one Proponent did submit an alternate proposal through the existing RAV procurement process with surface LRT in Richmond and in Vancouver from 65<sup>th</sup> to 23<sup>rd</sup> Avenue. Their capital cost was significantly higher than the cost estimate, after adjustments and inclusion of property and administration costs.

It is considered technically feasible to complete construction of a primarily surface LRT system within the schedule constraints. However, this scenario has a high degree of schedule risk primarily due to the requirement to develop new Essential Elements and obtain approvals from the funding partners and cities.

Assuming that all currently committed partner agency funding remains available, and using the Project Definition Report construction estimates, the project funding gap would be in the range of \$100M for this option. To bridge this funding gap, the GVTA would require any unused funding made available for the NES project through the change in amortization or reduction in Major Road Capital allocation, or reductions to the projects outlined in the Ten Year Outlook. If one or more of the funding partners does not commit funds for the new RAV procurement, the GVTA would require significant reductions to the Ten Year Outlook in order to fully fund the RAV line.

Proceeding with this option requires the following:

- Termination of the current RAV procurement process
- Province, federal government and YVR to keep partner funding on the table for new RAV procurement
- City of Vancouver resolution to endorse fully at-grade system on Cambie alignment

## PROVINCIAL OFFER

On June 10, 2004, the Province offered to assume responsibility for completing the RAV Line project under the current procurement process, with the GVTA continuing to provide the capital and operating funding committed to date. The RAV Line would be fully integrated with the regional transit network. The Province's offer also stated that is prepared to partner with the GVTA on the NES project and contribute \$170M to the project.

Under the Province's offer, the following commitments and conditions of the RAV Project would be retained:

- RAVCO Board structure (i.e., seven Directors)
- Procurement model and process
- Overall GVTA financial commitments during the construction period
- Overall GVTA financial commitments during the operating period including the bus savings and incremental ridership revenue credit
- Risk allocation to GVTA during the operating period, including ridership

The material changes for the GVTA under the Province's offer are that the Province would:

- Take the lead in project management and authority
- Negotiate the Concession Agreement, through RAVCO
- Own the mainline assets
- Manage the operating contract
- Assume responsibility for risks during the construction period

The Province has committed to maintaining overall transit system integration, with the GVTA maintaining responsibility for setting fare policy. The Province has also indicated that, at the request of the GVTA, it would also assume the ridership risk during the operating period, provided that the ability to set fares and alter service levels on the RAV line would also be transferred.

It should be noted that accepting the Province's offer has an impact on the GVTA's ability to achieve its mandate to lead, and be responsible for, the development of the region's transportation network. In taking over the management of the RAV project, the Province will be responsible for setting direction and decision-making, as well as contractual relationships with the Concessionaire, funding partners and cities. The governance structure will change such that RAVCO will report directly to the Province on all matters.

Should the Board wish to accept the Province's offer, it is recommended that the Board direct staff to:

- Transfer all shares of RAVCO to the Province;
- Renegotiate the funding agreement with the Province and to report back to the Board on key business terms which are to include:
  - Maintenance of Essential Elements as articulated in the RFP;
  - Requirement that Proponents propose an at-grade solution on No.3 Road in Richmond that will be implemented if a financially, technically and operationally viable solution is offered;
- Report back to the Board on recommendations and funding for Priced Options for the RAV project.

## Appendix 1 NES Line Summary

|                                                     | LRT                                                                                                                                                   | GLT                                                                                                                                                    |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Alignment/Technology</b>                         | <b>LRT NW (Barnet) – Partially Separated, Manual Operation (Figure 1)</b>                                                                             | <b>GLT NW (Barnet) – Partially Separated, Manual Operation (Figure 1)</b>                                                                              |
| <b>Total Annual Boardings (2021)</b>                | 7.6 M                                                                                                                                                 | 6.5 M                                                                                                                                                  |
| <b>Line Time</b>                                    | 21 min                                                                                                                                                | 23 min                                                                                                                                                 |
| <b>Peak Headway</b>                                 | 3 min                                                                                                                                                 | 3 min                                                                                                                                                  |
| <b>Ultimate System Capacity</b>                     | 8,000 persons per hour per direction (pphp)                                                                                                           | 6,000 pphp                                                                                                                                             |
| <b>Capital Cost (Oct. 2003 dollars)</b>             | \$612 M<br><u>\$ 71 M</u> <i>IDC</i><br>\$ 683 M <i>Planning Estimate</i><br><br><i>Does not include additional Expo and Millennium Line upgrades</i> | \$ 258 M<br><u>\$ 19 M</u> <i>IDC</i><br>\$ 277 M <i>Planning Estimate</i><br><br><i>Does not include additional Expo and Millennium Line upgrades</i> |
| <b>Available Funding</b>                            | \$ 170 M      Province<br>\$ 400 M      GVTA<br><u>\$ 13 M</u> GVTA MIF<br>\$ 583 M      Total                                                        | \$ 170 M      Province<br>\$ 400 M      GVTA<br><u>\$ 13 M</u> GVTA MIF<br>\$ 583 M      Total                                                         |
| <b>Unfunded Amount</b>                              | \$ 100 M                                                                                                                                              | (\$ 306 M)<br><i>Surplus</i>                                                                                                                           |
| <b>Gap Closure Options</b>                          | \$142 M      Extend GVTA \$775M debt amortization from 20 to 30 years<br>OR<br>\$105 M      Reduce Major Road Capital 2008-2010                       |                                                                                                                                                        |
| <b>Annual Operating Cost in 2010 (2003 dollars)</b> | \$ 11 M                                                                                                                                               | \$ 9 M                                                                                                                                                 |
| <b>Annual Incremental Revenue in 2010</b>           | \$ 6 M      (1200 new riders in AM peak)                                                                                                              | \$ 5 M      (1100 new riders in AM peak)                                                                                                               |
| <b>Average Annual Operating Subsidy</b>             | \$ 5 M <i>Planning Estimate</i>                                                                                                                       | \$ 4 M <i>Planning Estimate</i>                                                                                                                        |

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |             |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Approvals Required</b> | <b>COB</b> <ul style="list-style-type: none"><li>• Alignment, Technology</li></ul> <b>COPM</b> <ul style="list-style-type: none"><li>• Alignment, Technology</li></ul> <b>COQ</b> <ul style="list-style-type: none"><li>• Alignment, Technology</li></ul> <b>Province</b> <ul style="list-style-type: none"><li>• Feasibility Study</li><li>• Environmental assessment, regulatory</li></ul> <b>GVTA</b> <ul style="list-style-type: none"><li>• Feasibility Study (Financial, Ridership, Risk)</li></ul> | Same as LRT |
| <b>Schedule</b>           | Milestones Required for 2010 <ul style="list-style-type: none"><li>• Select corridor and technology options – Sept 2004</li><li>• Project Approvals – Sep 2005</li><li>• Environmental Certification – Jun 2006</li><li>• Procurement – Jan to Sep 2006</li><li>• Start Detailed Design – June 2006</li><li>• Construction Start – Jan 2007</li></ul>                                                                                                                                                     | Same as LRT |

Sources: Alternatives Study March 2004

**Figure 1 – North East Sector NW Corridor**

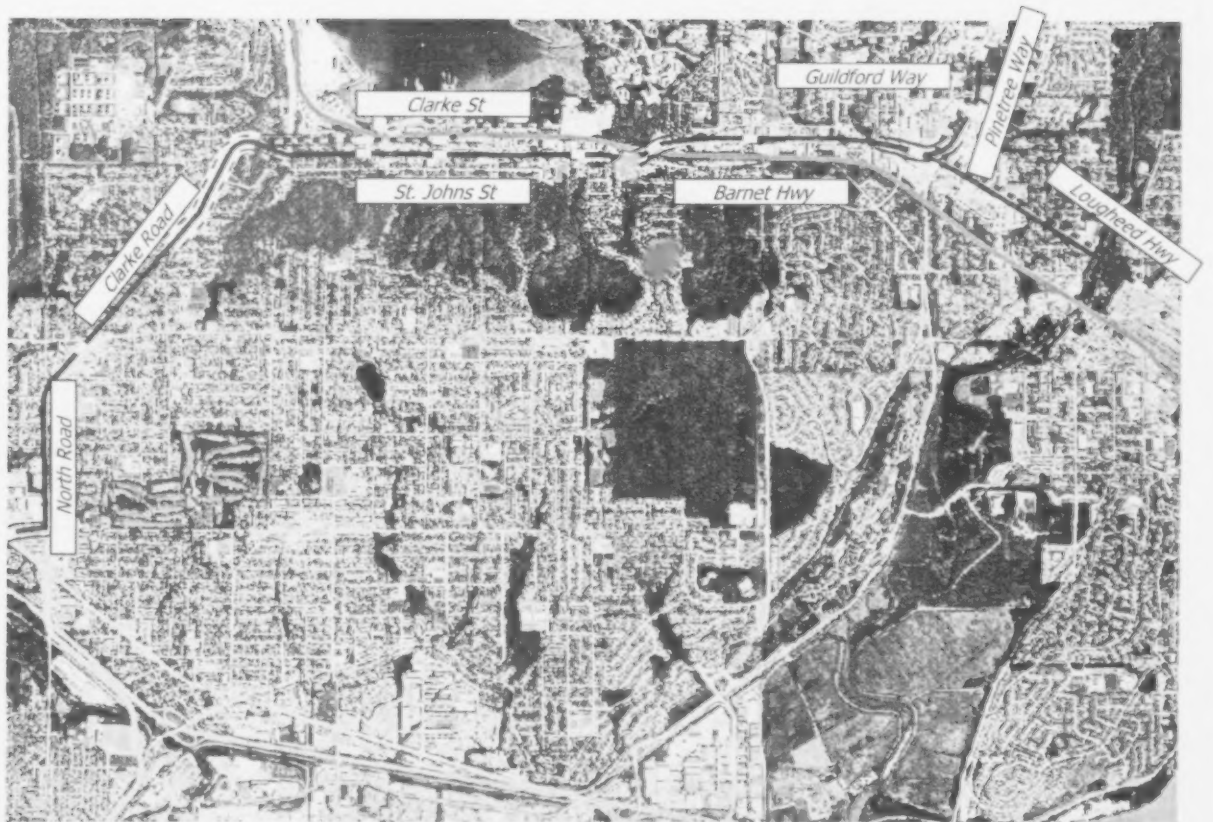


**Figure 2 - Fully Grade Separated ALRT**

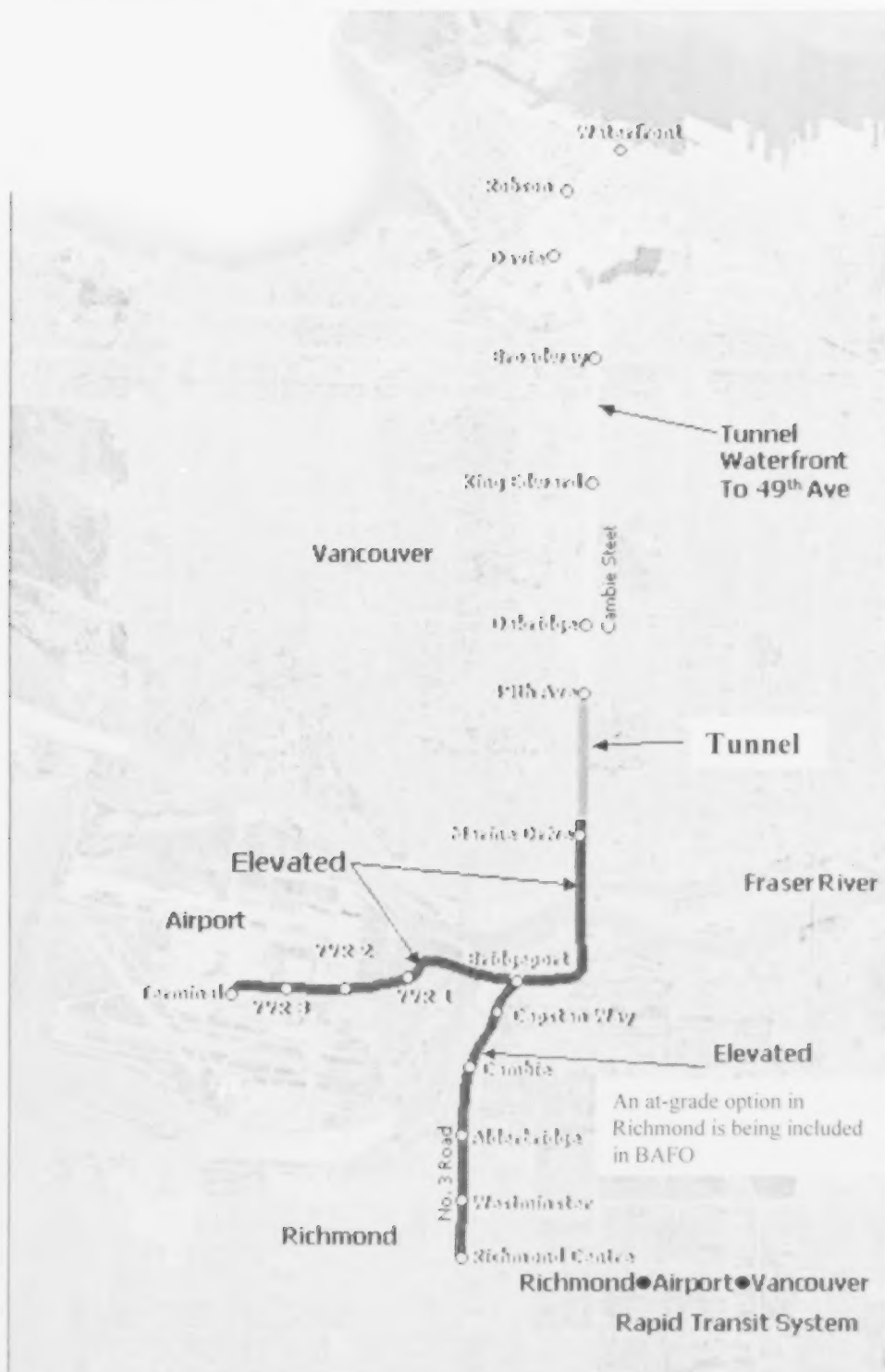


**Figure 3 - Partially Grade Separated LRT**



